WHAT IS CLAIMED IS:

1. A method for identifying the individual elements of a micro-array, comprising the steps of:

calculating the lattice constant of the micro-array;

aligning a grid to a set of elements of the micro-array;

performing a local spatial adjustment to each element of the micro-array; and

delineating the boundaries of each grid element.

2. The method for identifying the individual elements of a micro-array of claim 1, wherein the step of calculating the lattice constant comprises the steps of:

performing a two-dimensional periodogram of the image; and

measuring the distance between the two strongest peaks of the periodogram.

3. The method for identifying the individual elements of a micro-array of claim 2, wherein the step of calculating the lattice constant comprises the step of measuring the angle formed by a vector from the coordinates origin to the closest peak provides the angle of rotation of the grid array.

4. The method for identifying the individual elements of a micro-array of claim 3, wherein step of aligning the grid according to a set of elements of the micro-array comprises the step of aligning a grid of a sub-array of the micro-array according to the angle formed by a vector from the coordinates origin to the closest peak provides the angle of rotation of the grid array.

5. The method for identifying the individual elements of a micro-array of claim 1, wherein the step of calculating the lattice constant comprises the steps of:

applying an auto-correlation function to a sub-array of the micro-array;

identifying the first peak that lies in the x direction from the coordinates origin of the sub-array to calculate the lattice constant in the x direction;

identifying the first peak that lies in the y direction from the coordinates origin of the sub-array to calculate the lattice constant in the y direction;

6. The method for identifying the individual elements of a micro-array of claim 5, wherein the step of calculating the lattice constant comprises the step of measuring the angle formed by a vector from the coordinates origin to the closest peak in the x direction.

7. The method for identifying the individual elements of a micro-array of claim 6, wherein step of aligning the grid according to a set of elements of the micro-array comprises the step of aligning a grid of a sub-array of the micro-array according to the angle formed by a vector from the coordinates origin to the closest peak in the x direction.

8. The method for identifying the individual elements of a micro-array of claim 1, wherein the step of aligning a grid to a set of elements of the micro-array comprises the step of creating a template sub-array that includes identical round dots spaced from one another according to the lattice constant.

9. The method for identifying the individual elements of a micro-array of claim 8, wherein the step of aligning a grid to a set of elements of the micro-array comprises the step of cross-correlating the template sub-array against a selected set of elements of the sub-array.

10. The method for identifying the individual elements of a micro-array of claim 1, wherein the step of performing a local spatial adjustment to each element of the micro-array, comprises the step of refining the dot placement of each dot of each sub-array of the micro-array.

11. The method for identifying the individual elements of a micro-array of claim 10,

wherein the step of aligning a grid to a set of elements of the micro-array comprises the step of aligning a rectilinear grid to a sub-array of the micro-array; and

wherein the step of refining the dot placement of each dot of each sub-array of the micro-array comprises the step of, from the center of the grid, performing an outward concentric search for objects formed by contiguous pixels and having an intensity greater than the background of the image of the micro-array.

12. The method for identifying the individual elements of a micro-array of claim 11, wherein the step of refining the dot placement of each dot of each sub-array of the micro-array comprises the step of calculating for each dot the difference between the actual position and the expected position.

13. The method for identifying the individual elements of a micro-array of claim 12, wherein the step of refining the dot placement of each dot of each sub-array of the micro-array comprises the step of creating a vector filed identifying the distance and direction between the actual position and the expected position of each dot in the sub-array.

14. The method for identifying the individual elements of a micro-array of claim 1, wherein the step of delineating the boundaries of each grid element comprises the step of applying a constraining shape mask to each dot of each sub-array of the micro-array.

15. The method for identifying the individual elements of a micro-array of claim 14, wherein the step of applying a constraining shape mask to each dot of each sub-array of the micro-array comprises the step of summing the image of the dots in the sub-array having the highest intensity to form a constraining shape mask.

16. The method for identifying the individual elements of a micro-array of claim 15, wherein the step of applying a constraining shape mask to each dot of each sub-array of the micro-array comprises the steps of,

applying the constraining shape mask to each dot of the sub-array; and

disregarding any pixels that fall outside the boundary of the shape mask.

17. The method for identifying the individual elements of a micro-array of claim 16, wherein the step of applying a constraining shape mask comprises the step of adjusting the location of the constraining shape mask to achieve a fit of the shape mask to the dot of the sub-array.